

GEOGRAPHIC AND TEMPORAL PATTERNS OF RECURRENT INTENTIONAL INJURY IN SOUTH-CENTRAL LOS ANGELES

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To better understand geographic and temporal patterns of recurrent intentional injury, 285 consecutive trauma patients were evaluated prospectively. Fifteen were excluded because of immediate death or severe brain injury. The remaining 270 patients were interviewed. Of these, 59 (22%) had been treated in a hospital for a total of 75 previous episodes of intentional trauma (mean: 1.3 episodes/patient). In 66 of the 75 episodes, the patient recalled where treatment had been received (88%). Twenty-eight (42%) of the 66 episodes had been treated at King/Drew Medical Center (KDMC), 36 (55%) had been treated at a hospital within a 3-mile radius of KDMC, 48 (73%) within an 8-mile radius, and 63 (95%) within a 10-mile radius. Sixty-five percent of the episodes occurred 5 years or less prior to the current injury (range: 11 days to 30 years; mean: 4.9 years). Patients currently admitted for intentional injury were more likely to have had intentional injury previously than those with unintentional injury (27% versus 12%). Based on these findings, we conclude that intentional trauma patients in our community remain in a defined geographic region and that there is a definable high-risk period for recurrent intentional injury. These conclusions should enhance the development of a framework on which future violence pre-

vention programs can be designed. (*J Natl Med Assoc.* 1996;88:570-572.)

Key words • intentional injury • trauma

Victims of intentional injury may have a tendency to frequently move from community to community. Reasons for this may be that they find less benefit to remaining in the same area as others (eg, due to lack of steady employment or strong family ties). Conversely, they may have increased motivation to move if they are being pursued by creditors, enemies, or law enforcement agents. Whether they remain in the same general area may have significant impact on the effectiveness of violence prevention programs and long-term follow-up of certain traumatic injuries. Moreover, individuals may have certain periods of time when they are at greater or lesser risk to have a recurrent episode of injury. Knowing which are the high-risk periods will assist in the allocation of resources. This study was undertaken to test the hypothesis that this population is geographically transient and that there is a definable time when recurrent injury is likely.

MATERIALS AND METHODS

King/Drew Medical Center (KDMC) in south-central Los Angeles is an American College of Surgeons certified Level I trauma center serving a catchment area of approximately 900,000. Patients evaluated by the trauma service include those meeting Los Angeles County trauma criteria or guidelines (Table). Also evaluated are those patients referred from emergency medicine physicians because of suspicion for significant head, torso, or vascular injury. There are three trauma teams (ie, physicians are on-call every third day).

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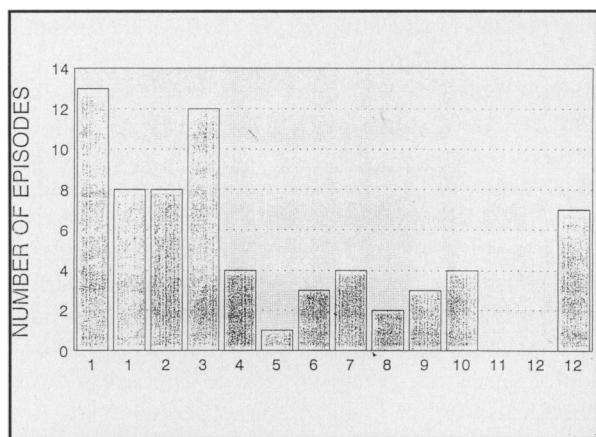


Figure. Temporal distribution of previous episodes of intentional trauma relative to the current episode of trauma in years.

From November 1991 through February 1992, a total of 285 patients ≥ 16 years were evaluated by one of the three trauma services. One of the authors (J.R.B.) was a resident, and another (F.R.K.) was an attending on that service for the entire 4 months, which included 40 call periods. Of the 285 patients, 15 were eliminated because they could not give a history (11 were dead on arrival, 3 had gunshot wounds to the head and died in the emergency room, and 1 had persistent coma due to severe closed-head injury).

All remaining 270 patients were interviewed by one person (J.R.B.). Data obtained included name, date, race, current mechanism of injury, previous episodes of injury including mechanism, hospital where treated, and date. Chi-squared analysis was used to compare the incidence of previous intentional trauma between those currently admitted for intentional versus unintentional injury.

RESULTS

Of the 270 patients, 172 (64%) had intentional trauma (ie, gunshot wounds, stab wounds, and blunt assault), and 98 (36%) had unintentional trauma (all others).

Patient Characteristics

Sixty-two percent of the patients were 16 to 29 years old, and 38% were ≥ 30 years. Fifty-five percent of the patients were black, 40% were Latino, and 5% were Asian or white. Eighty-one percent of the patients were male and 19% were female.

Previous Intentional Injury

Incidence. Fifty-nine of 270 patients (22%) reported having been treated in a hospital previously for a total

TABLE. LOS ANGELES COUNTY TRAUMA TRIAGE CRITERIA AND GUIDELINES

Systolic blood pressure <90 mm Hg
Fall from height >15 feet
Diffuse abdominal tenderness
Intrusion into passenger space
No spontaneous eye opening
Gunshot wound to trunk
Penetrating wound to head or neck
Stab wound between midclavicular lines
Flail chest
Pedestrian struck by auto
Ejected from vehicle
Required extrication
Extremes of age
Survivor of fatal accident

of 75 episodes of intentional injury (1.3 episodes per patient; range: 1 to 3). Of the 172 currently treated for intentional injury, 47 (27%) had been treated in a hospital for intentional injury, while 12 of 98 (12%) of those currently treated for an unintentional injury had a previous episode of intentional injury ($P < .01$).

Place of Treatment. For 66 of the 75 previous episodes of intentional injury, the patient remembered where he or she had been treated (88%). Twenty-eight of the 66 episodes (42%) had been treated at KDMC. Thirty-six episodes (55%) were treated at 3 hospitals within a 3-mile radius of KDMC (including KDMC), 48 (73%) at 8 hospitals within an 8-mile radius, and 63 (95%) at 11 hospitals within a 10-mile radius. Three of the 11 hospitals are county-operated facilities. Four hospitals are trauma centers, and two others had been trauma centers that closed. The three episodes treated more than 10 miles away were accounted for by three patients: two had been treated in Mexico (one for a stab wound and the other for a gunshot wound), and the third had been treated in Michigan for a gunshot wound.

Timing. For 69 of the 75 episodes, the patients remembered when it had occurred (92%). Thirteen (19%) of these 69 episodes had occurred less than 1 year prior to the current injury, 41 (59%) 4 years or less, and 45 (65%) 5 years or less (Figure). The range was 11 days to 30 years (mean: 4.9 years).

DISCUSSION

For years, health-care professionals have noted that a significant number of patients treated for intentional injury have had a history of intentional injury. Recently, there has been literature to support this observation. In a study of 72 patients, Goins et al¹ documented that 49% had a previous episode of intentional injury. Poole et al² found that 61% of 64 patients had a previous

episode. Sims et al³ found that 44% of 263 patients sustained another episode of intentional injury within the 5 subsequent years. Morrissey et al⁴ showed that of 389 patients with penetrating trauma, at least one third will sustain another penetrating injury within 5 years. In the present study, 27% of intentional injury victims had a history of intentional injury.

From the above it is clear that victims of intentional injury are at high risk for repeat injury. The obvious next question is how to prevent it. It is likely that any program designed to prevent recurrent intentional injury will require long-term participation by the patient to be successful. In addition, those administering the program need long-term follow-up to evaluate its effectiveness. This would be impossible if the patients frequently move to remote areas. The current study documents that recurrent injury victims are not geographically transient. This supports the concept that programs designed to prevent recurrent intentional injury that cover defined geographic areas are feasible. Moreover, if patient follow-up is poor, it is unlikely to be due to the patient moving from the area. This study

does not address the issue of how transient this population is within the area.

With regard to the timing of recurrent injury, this study was the first to attempt to define how episodes of recurrent intentional injury are distributed over time. Almost one fifth of the previous episodes occurred 1 year or less prior to the current event, and almost two thirds occurred within 5 years. This implies that there may be a certain period of extreme high risk during which resources should be primarily allocated. It is possible that once this high-risk period has passed, allocation of a program's resources can be directed to those individuals who are in that high-risk period.

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